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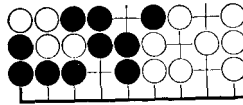
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CHAPTER 2

Counting

Frequently during the endgame you are faced with a choice of two or three or four moves and must count to find which is the biggest. That sounds simple, but you know by now that it is not—that there can be all sorts of follow-up moves, combinations, and other complications involved. Most important is the question of sente and gote; it is often correct to make a small sente play before a larger gote one. On the basis of sente and gote relationships it is possible to classify moves into four types—gote, sente, reverse sente, and double sente—and we shall begin this chapter by examining each type from a theoretical point of view. Then you will have a chance to apply the theory to some problems. 1. Gote

Gote means gote for both sides, so we are dealing here with situations in which neither player could play in sente. Dia. 1 shows an example from the game in chapter one. As you will recall, a move by one side or the other on the lower edge is worth two points.



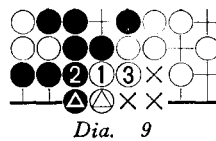
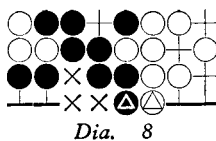
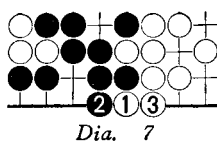
Dia. 1



If White goes first he will do the same thing, as in Dia. 3. Comparing Dias. 2 and 3, we see that White's territory is one point (marked **x**) bigger in Dia. 3 than it was in Dia. 2, and Black's territory is one point (**x**) bigger in Dia. 2 than in Dia. 3, so the total difference is $1 + 1 = 2$ points.



Dia. 5 does not completely finish the situation. It ends it for the time being, but later on either Black will return to play 1 in Dia. 6 or White will return to play 1 in Dia. 7.

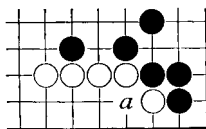


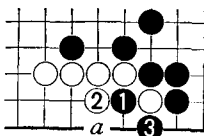
In evaluating Dia. 5, how do we cope with these two possibilities? It would be unfair to White to assume Dia. 6; Black plays two stones in Dia. 6 to White's one, so assuming it would be akin to giving Black an extra move. On the other hand, it would be unfair to Black to assume Dia 7.

What we do is to strike the mean and assume Black $\triangle$ and White $\triangle$ in Dia. 8. That gives a value exactly halfway between Dias. 6 and 7, and since both sides have been assumed one added stone, neither can complain.

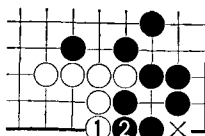
If White goes first, he will play 1 and 3 in Dia. 9, and again we assume $\triangle$ and $\triangle$. The difference between Dias. 8 and 9 is six points: three points of black territory and three points of white. White 1 in Dia. 9, or Black 1 in Dia. 5, is thus worth six points in gote.

What we did in Dia. 8 was to take the mathematical average of Dias. 6 and 7, a procedure that is often needed to get a fair numerical value for a move. We will have to use it, for example, in finding the value of a white connection or black capture at a in Dia. 10. How much do you think this will be worth?

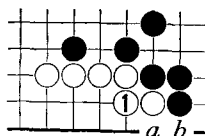




Dia. 11



Dia. 12

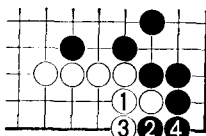


Dia. 13

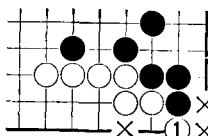
First let's suppose that Black captures at 1 in Dia. 11. After Black 3, a black hane at *a* would be gote, so it is fair to assume that White 1 and Black 2 in Dia. 12 will finish off the lower edge. In fact, at the proper time, White's descent to 1 should be sente, since it threatens an atari at 2.

Next let's suppose that White connects at 1 in Dia. 13. This is where the averaging comes in, because there is a fairly large hane left for someone in Black *a* or White *b*. There is no special reason to assume that either side will get to make it, so we have to take the average. The easiest way to do this in practice is the following.

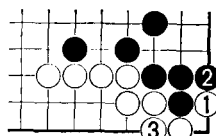
First assume that Black answers White's connection, by playing 2 in Dia. 14, and count to see how much White has gained. Black's territory is three points larger in Dia. 12-a pair for the prisoner plus the point marked **x** – than in Dia. 14, and White's is one line (two points) smaller. That makes five points, and tells us that in the unlikely event that Black really does answer White 1 in Dia. 14 immediately, White has gained five points in sente.



Dia. 14



Dia. 15



Dia. 16

Next determine the value of White's second move, the hane at 1 in Dia. 15. This is also a move that we met in chapter one, and you may remember the value three points; it enlarges White's territory by one point and reduces Black's territory by two points, all marked x, in comparison with Dia. 14. White 1 is worth a little more than that, however, because White may be able to make the further hane at 1 in Dia. 16 and reduce Black's territory by one more point. Of course he has to win a ko to keep this extra point, and White 1 in Dia. 16 is gote to begin with, so we cannot add on too much for it, but at least we can count White 1 in Dia. 15 as being worth 3 (+) points in gote.

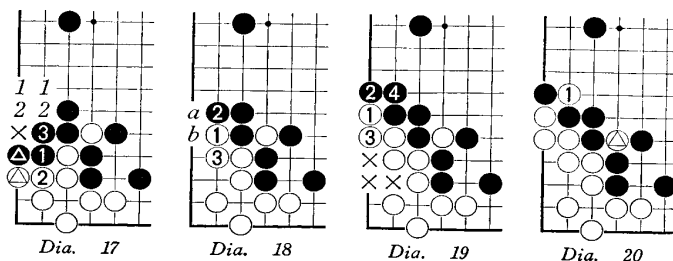
Finally, to take the average of Dias. 14 and 15, add half the value of White 1 in Dia. 15 to the figure obtained in Dia. 14. Half of 3 (+) is $1\frac{1}{2}(+)$, or 2 (-), so the sum is:

$$5+2(-)=7(-).$$

That is the value of White 1 in Dia. 13 or Black 1 in Dia. 11.

During actual play you are not going to have to go through a lot of computations like the above before you put down every stone, thank goodness, but there are times when it would be very helpful to know the value of a move like 1 in Dia. 11 or 13. With a little practice, you should be able to make the necessary calculations quickly and easily, and even if you get a slightly wrong answer, going through the process will have forced you to think about the moves in a logical way, and that in itself will be valuable. You will learn shortcuts, too, such as 'White 1 in Dia. 13 is essentially like the hane and connection in Dias. 4 to 9, which was worth six points, except that the hane in Dia. 15 is a point or two bigger than an ordinary hane on the first line, so I'll add on one extra and call it seven.

When the following move is made in sente instead of gote, you count in its full value instead of only half. You should understand that fact from the previous chapter. In light of it, let's take another look at a hane and connection on the second line.



What is the value of Black 1 and 3 in Dia. 17? If Black plays these two moves, we can make the standard assumption of Black  and White  to finish off the edge. If White plays 1 and 3 in Dia. 18, however, we cannot assume Black *a* and White *b*, because now White can play *a* in sente.

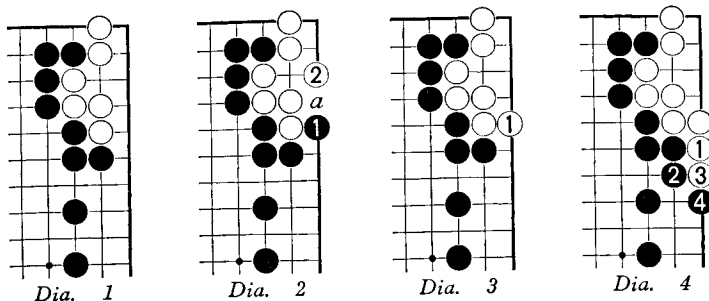
The correct assumption is White 1 to Black 4 in Dia. 19. (If Black does not connect at 4, White will cut at 1 in Dia. 20, and because of the stone marked , Black will be in a lot of trouble). Since Black and White have played two stones apiece in Dia. 19, this is fair.

Comparing Dias. 17 and 19, you can see that Dia. 17 makes Black's territory five points larger, (two pairs plus the point marked ), and White's three points smaller. Black 1 in Dia. 17 is thus worth eight points. In general, the value of a hane and connection on the second line varies from six points on up, depending on what the follow-up moves are and whether they are sente or not.

For future reference, notice that in a gote situation, there is a difference of two stones between one side's playing first and the other side's playing first. In Dia. 17, for instance, Black has played two stones and White one, while in Dia. 18 Black has played one stone and White two.

2. Sente

In this section we shall be dealing with one-sided sente situations, where one side has a sente move, but the other side has only a gote move. Dia. 1 shows one such.



The side with the sente move here is Black; when he hanes at 1 in Dia. 2, White must answer as shown to save his corner. He cannot play 2 at a, or Black will step over him by playing 2 (atari!) and kill him. How much is Black 1, which reduces White's corner territory to three points, worth?

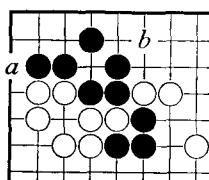
If White gets a chance to play here, his move is the descent to 1 in Dia. 3. Now his corner territory is five points, two points larger than before. White 1 is gote, but White can presumably push out at 1 and 3 in Dia. 4 in sente, so we have to count that in when figuring the value of Dia. 3. Dia. 4 reduces Black's territory by three points, making the total value here $2+3=5$ points.

Moreover, the difference in the number of stones played in Dias. 2 and 3 is only one; in both diagrams White has played one stone, while Black has played one stone in Dia. 2 and no stones in Dia. 3. This is why a sente play is considered to have twice the value of a gote play. Black 1 in Dia. 2, (five points in sente), would be worth more, for example, than Black 1 in Dia. 17 on the previous page, (eight points in gote). We can even put this in mathematical terms:

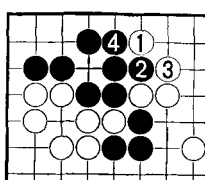
$$\frac{(5 \text{ points})}{(1 \text{ stone})} > \frac{(8 \text{ points})}{(2 \text{ stones})}$$

The problem with a sente move is not so much its exact value as the proper time to play it: too early, and it may not

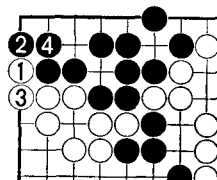
be answered; too late, and the chance may be lost. You will recall several examples from chapter one, including the position shown in Dia. 5. White had two sente moves there: a small one at *a* and a large one at *b*. He played the latter White 1 in Dia. 6-as soon as he could, and Black had to answer it because it threatened to kill the corner. He saved the former-White 1 in Dia. 7-for much later, because it was relatively small and because the threat that it involved was only to destroy about four points of Black's territory, not enough to make it sente if played too early.



Dia. 5



Dia. 6



Dia. 7

Taking into consideration the size of the move itself and the size of the threat behind it, we can identify four cases:

1. Big move, big threat (Dia. 6, for example). Play these early they are important.

2. Big move, moderate threat. Play these as early as the bigness of the move warrants, but don't count on your opponent answering the threat.

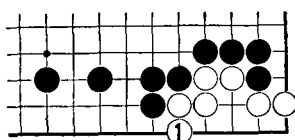
3. Small move, big threat (Dia. 2, for example). Here you have a lot of leeway; you can play the move early and your opponent will answer the big threat, or you can leave it for later and he will not give up his turn to take the small move away from you. You should leave such moves unplayed for a while at least-they make good ko threats-but remember that they are worth as much as gote moves twice their size, and don't leave them so long that your opponent plays them instead of you.

4. Small move, small threat (Dia. 7, for example). Save these, of course, until the appropriate time.

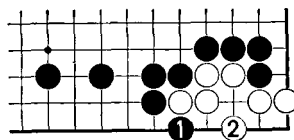
Occasionally you will make what you expect to be a sente play and be surprised to have it ignored. This does not mean that it was a mistake. Your opponent may be going to answer it, but after making some forcing moves of his own first, or he may have decided to try for some kind of exchange. A good player knows that if he answers all his opponent's moves, he will be taking one loss after another right through the whole endgame, so he is constantly on the lookout for chances to ignore them, play elsewhere, and make some profit of his own.

3. Reverse Sente

A reverse sente play is, as the name says, the reverse of a sente play: one made by the gote side in a one-sided sente situation. White 1 in Dia. 1 is worth five points in reverse sente. It is gote, but it stops Black 1 in Dia. 2, which would be sente.



Dia. 1



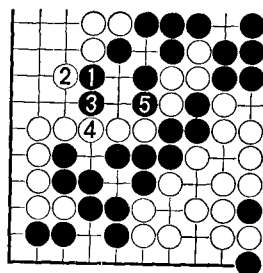
Dia. 2

A reverse sente play has the same double value as a sente play, and for the same reason—that there is a difference of only one stone between it and the enemy's playing in sente. White 1 in Dia. 1 has, in theory, the same value as a ten-point gote play:

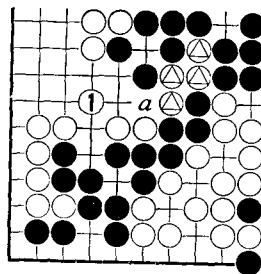
$$\frac{(5 \text{ points})}{(1 \text{ stone})} > \frac{(10 \text{ points})}{(2 \text{ stones})}$$

This means that, in theory, White should prefer it to any gote play worth less than ten points

The opportunity to make a reverse sente play usually arises when the enemy's sente move is not backed up by a very big threat. In the game in chapter one, you will remember that Black made the reverse sente play at 1 to 5 in Dia. 3.



Dia. 3



Dia. 4

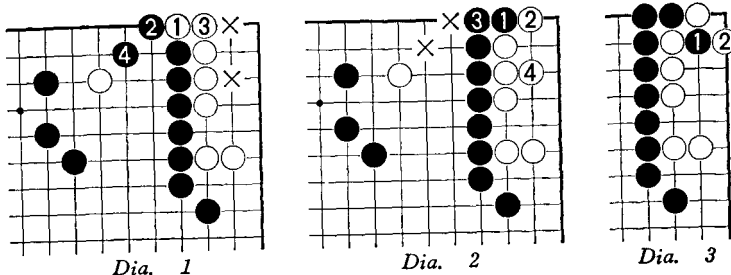
White would have liked to play 1 in Dia. 4 in sente, but the threat behind it, to connect at a and rescue the four stones marked $\triangle$, was worth only about eight plus one or two, say ten points, which would not have been enough to make Black answer it early in the game. When the endgame reached the ten-point level White was busy in the upper half of the board, and Black emerged from there with sente to play Dia. 3.

Reverse sente opportunities like this are a common occurrence. Even though reverse sente moves are gote, you should not think of them as gote; they really are about twice as valuable as ordinary gote moves, a fact which the problems in the second half of this chapter will support.

4. Double Sente

A double sente situation is one in which either side can play in sente. In Dia. 1 on the next page, for example, White can hane at 1 and connect at 3, and if Black does not answer at 2 and 4, he loses a large amount of territory. Similarly, Black can hane at 1 and connect at 3 in Dia. 2, and if White

does not answer at 2 and 4, his corner group is in danger. (If he plays 2 and omits 4, he cannot be killed unconditionally, as Dia. 3 shows, but the ko is still a sizable threat.) Comparing Dias. 1 and 2, we see that the difference is two points of black territory and two points of white territory, or four points in all.



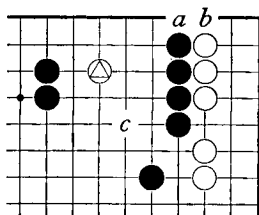
If we compare the number of stones played, however, we find no difference at all. In both diagrams Black and White have played two stones apiece. If we try to divide the number of points gained by the number of stones difference, as we have been doing so far, we get:

$$(?) \frac{(4 \text{ points})}{(0 \text{ stone})} = \infty$$

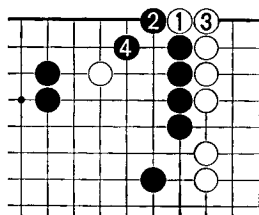
What this means is that whoever makes the hane, White in Dia. 1 or Black in Dia. 2, is getting something for nothing. Double sente moves are the prize points on the board, and both players try to take them as early as possible.

How early can they be taken? That depends, of course, on the size of the threats that follow them. The bigger the threat, the earlier the move can be made in sente.

How early the move should be made is another question. In Dia. 4 we have the same double sente situation at *a-b* on the upper edge, except that now White still has a lot of scope for activity in the stone marked $\triangle$; consider White *c*, for instance. It would be a crime for him to play 1 and 3 in Dia. 5; he would only be hurting his chances to do something bigger in this area. He should abstain, therefore, even if it means enduring Black *b* in Dia. 4.

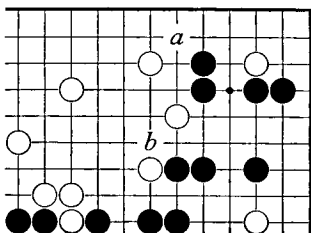


Dia. 4

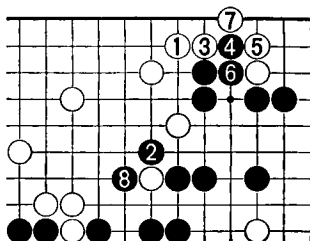


Dia. 5

Still, the competition to take double sente points tends to be rather intense. In the game in chapter one, you will remember, a double sente point arose at *a* in Dia. 6. If White played there he would be threatening to jump into Black's corner, and if Black played there he would be threatening to jump into White's upper side. It was White's turn, and although there was a larger gote move at *b*, he felt he could not put off *a*, so he played it before it was really sente, and the exchange in Dia. 7 followed. Such exchanges are natural in close games.



Dia. 6



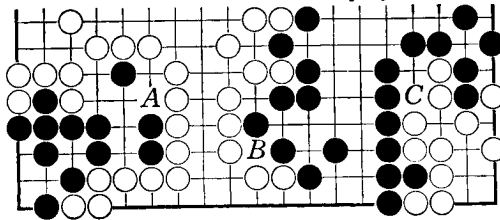
Dia. 7

5. Problems

Now you can apply what you have learned to the following problems. In each one three possible moves are marked A, B, and C; assume that there is nothing else worth considering on the board and try to figure out the best sequence in which to play them.

Your first step should be to examine the moves one by one and determine how much each is worth and whether it is gote, sente, or whatnot. Next you should experiment with different sequences and try to find the one that gives you the most profit. Finally, in order to score yourself, identify the largest move—not necessarily the largest in absolute value, but the one you should play first in the optimal sequence and the smallest move—the one that comes last of the three in the optimal sequence — and try to assign a numerical value — 4 points in double sente, for example — to each move. After turning the page and reading the answer, give yourself ten points if you correctly identified the largest move and ten points if you correctly identified the smallest move, then subtract the total amount by which your numerical values were off the mark. Twenty points is thus the perfect score for each problem, and there is a scoring chart at the end.

Problem 1. *Black to play*

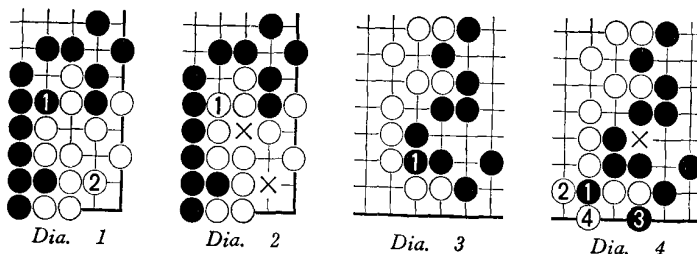


Largest move _____ smallest move _____
 A: _____ pts. in _____ B: _____ pts. in _____ C: _____ pts. in _____

Largest move: C – 2 points in sente.

Dia. 1. If White does not answer at 2, Black 2 kills him.

Dia. 2. White 1 would enlarge the corner by 2 points.

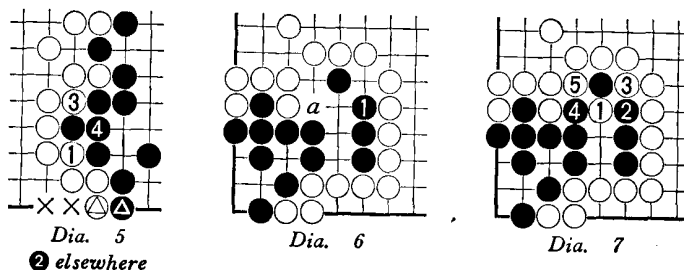


2nd largest move: B – 3 points in gote.

Dia. 3. Although gote, this move has hidden value.

Dia. 4. Next Black can play 1 and 3 in sente. The reason he cuts at 1, instead of just playing 3 and letting White connect at 1, is to leave a ko threat for himself inside White's territory.

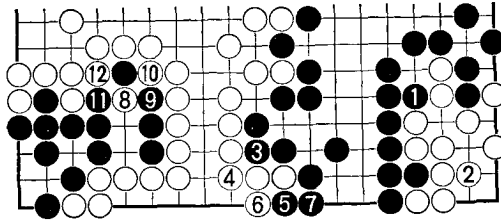
Dia. 5. White 1 is gote, but it promises 3 in sente. Black's territory is now 1 point smaller than before, and White's territory, assuming $\triangle - \triangle$, is 2 points larger. An easy way to visualize White's gain is to take Black 1 in *Dia. 4* mentally off the board, (one prisoner point), and move White 2 over to occupy its place.



Smallest move: A-1½ points in gote.

Dia. 6. Black 1 saves a prisoner, and next Black *a* would make one point of territory.

Dia. 7. White 1 takes a prisoner, but without making any territory.

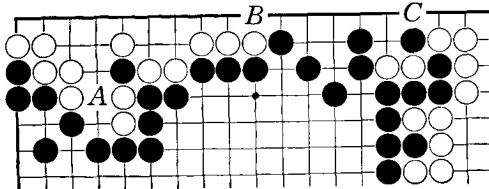


Combination Figure

Combination figure. Black takes his two points in sente at 1, then goes to 3. White's connection at 4 leaves Black 5 and 7, at two points in gote, as the largest plays on the board, so Black makes them and White gets 8. Black has taken B and C, worth a total of five points. If he had started with B, or 3 in the figure, followed by White 1 and Black 9, he would have picked up only four and a half points, which shows how two points in sente can be more valuable than three points in gote.

White 4 at 5 would give the same net result, but from the standpoint of not leaving ko threats, 4 is best.

Problem 2. *White to play*



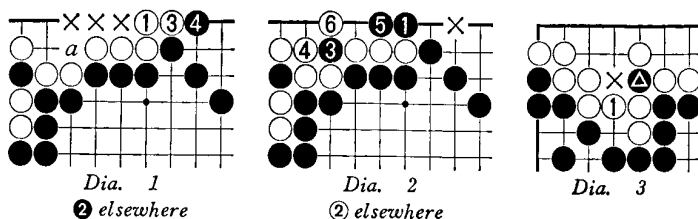
Largest move _____ smallest move _____

A: _____ pts. in _____ B: _____ pts. in _____ C: _____ pts. in _____

Largest move: B – 4 points in gote.

Dia. 1. Descending to 1 means that White will not have to connect around a, and next he can push out at 3 in sente. Incidentally, if White played 1 at 3, Black could make a throw-in at 1, and then White would have to connect around a.

Dia. 2. Black 1 is gote, but 3 and 5 follow automatically. After mentally removing Black 3 and moving White 4 over, we see that White's territory is three points smaller, and Black's one point larger, than in *Dia. 1*.

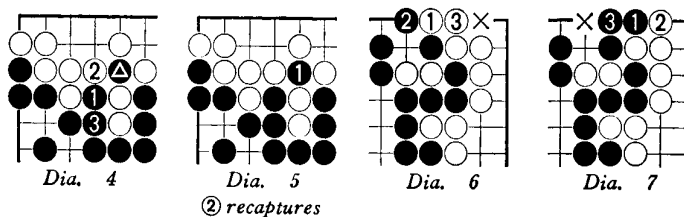


2nd largest move: A – 3 points in gote.

Dia. 3. Connecting at 1 gives White one point of territory at x and two at △, or three in all.

Dia. 4. If Black plays 1 and 3, White immediately loses two of those three points, being left with only the prisoner point at △. White will ignore Black 3, making it gote, but –

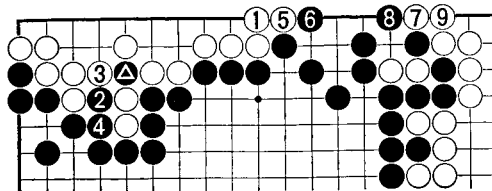
Dia. 5. Then Black trades one prisoner for two and takes White's third point away from him.



Smallest move: C – 2 points in gote.

Dia. 6. If Black has his eyes open he will not connect against White 1, but play 2 and make White connect. White has reduced Black's territory by one point in gote.

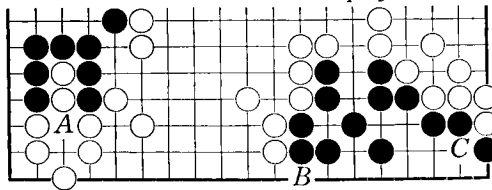
Dia. 7. Similarly, Black can reduce White's territory by one point in gote. The total value here is two points.



Combination Figure
 10 at $\triangle$. 11 recaptures.

Combination figure. All three moves are gote, so the players take them in order of absolute value, from largest to smallest. The only possible variation in this sequence is that White could play 7 at 9, threatening 8. Black would defend at 7, and then White could connect at $\triangle$. **This** would give him one more point in the upper left corner, but one less point in the upper right corner. Either way, White ends the exchange in gote.

Problem 3. White to play

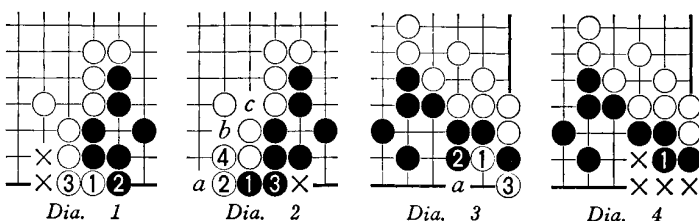


Largest move _____ smallest move _____
 A: _____ pts. in _____ B: _____ pts. in _____ C: _____ pts. in _____

Largest move: B—3 points in reverse sente.

Dia. 1. White 1 makes White's territory two points larger, and Black's territory one point smaller, than if Black got to play here first.

Dia. 2. Thus the value of a move here is three points, but the important thing is that Black can play 1 and 3 in sente. If White omits 4, then Black 4, White *a*, Black *b*, White *c*, and Black can capture White 2 and *a*. That makes White 1 in Dia. 1 a reverse sente play.

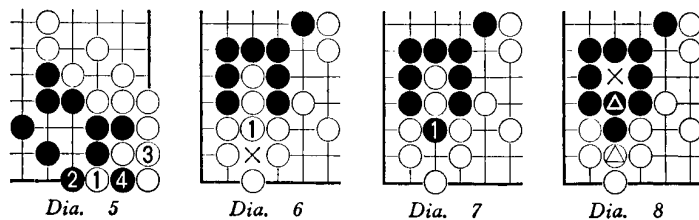


2nd largest move: C — 5 (+) points in gote.

Dia. 3. White can reduce Black's territory and take a prisoner, but in gote.

Dia. 4. Black's connection saves him the four points of territory marked x : add on the prisoner, and the value of Black 1 is five points. This is assuming that Black eventually descends to a in Dia. 3.

Dia. 5. Actually, the value is a little more than five. By making the hane at 1 and winning the ko, White may be able to reduce Black's territory by one more point, which adds a 'plus' to the five points counted in Dias. 3-4.

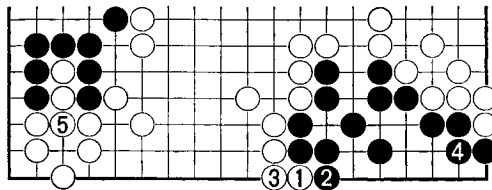


Smallest move: A—4 points in gote.

Dia. 6. By connecting, White keeps the one point of territory marked **x**.

Dia. 7. Black 1 takes two prisoners.

Dia. 8. And after connecting at **△**, Black has one point of territory at **x**. He has made one point of territory, destroyed one point of territory, and taken two prisoners for a total gain of four.

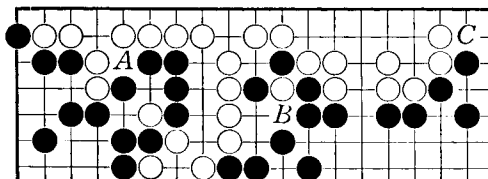


Combination Figure

Combination figure. After White takes the important reverse sente point at 1, he and Black split the two remaining plays, Black taking the larger at 4. The absolute values of White 1 and 5 are three and four respectively, for a total of seven.

If White had started by cutting at 4 and carrying out *Dia. 3*, Black would have played 3 in sente and captured at 5, getting two of the three plays. White's gain would only be 5 (+) points.

Problem 4. *Black to play.*

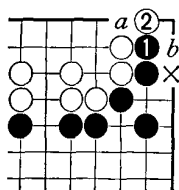


Largest move _____ smallest move _____
 A _____ B _____ C _____

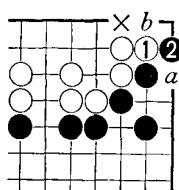
Largest move: C – 2 (-) points in double sente.

Dia. 1. White will answer Black 1 at 2 to keep Black from continuing at a and gaining 4 (+) points in sente.

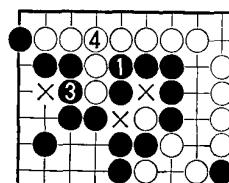
Dia. 2. Similarly, Black answers White 1 at 2 to stop White a. If we assume that White eventually descends to b, (and that Black does so in *Dia. 1*), the difference between Black 1 and White 1 is two points. We have to degrade these two points somewhat for the possibility of Black b, but as double sente, they still have top value.



Dia. 1



Dia. 2



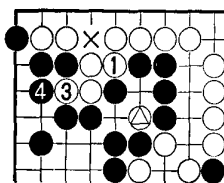
Dia. 3

② elsewhere

2nd largest move: A – 4 points in gote.

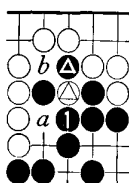
Dia. 3. Black 1 is gote, but it makes 3 Black's sente.

Dia. 4. Now 3 is White's sente, White has a point at x, and Black will eventually have to connect at two additional points around △. That adds up to four points in all.

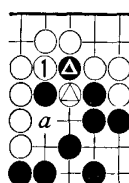


Dia. 4

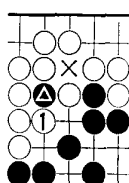
② elsewhere



Dia. 5



Dia. 6



Dia. 7

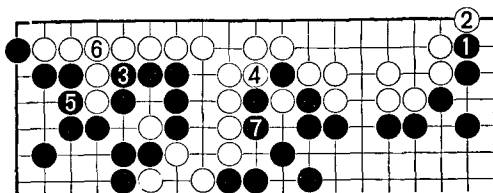
Smallest move: B – 3½ points in gote.

Dia. 5. Black 1 saves △ and captures △, but does not make any territory because a and b are miai.

Dia. 6. White 1 saves $\triangle$ and captures $\blacktriangle$, which makes a difference of two points so far, and there is a further play left at *a*.

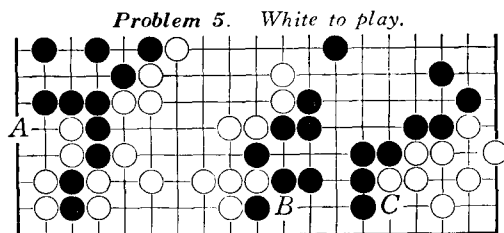
Dia. 7. That play is worth three points — two at $\triangle$ and one at *x* — but it is gote, so only half its value should be added on. White 1 in Dia. 6, or Black 1 in Dia. 5, is worth:

$2 + (\frac{1}{2} \times 3) = 3\frac{1}{2}$ points in gote.



Combination Figure

Combination figure. Black plays 1 in sente, then 3, and answers 4 at 7, so all White manages to get are the two points noted in Dia. 6. If Black had begun at 3, White would have gotten both 1 and 4, gaining 4(-) points. Worse yet, if Black had begun by playing at the right of 7, White would have gotten 1 and 3, gaining 6(-) points.



Largest move _____ smallest move _____
 A _____ B _____ C _____

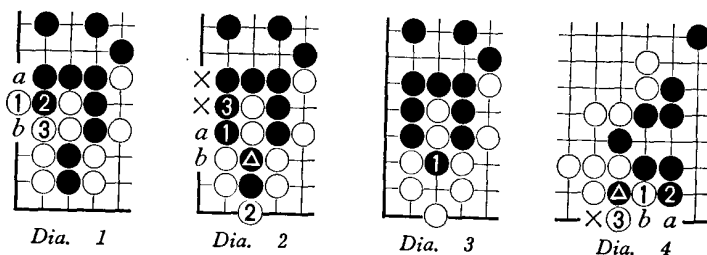
Largest move: A — 7 points in gote.

Dia. 1. Assume Black *a* and White *b* later.

Dia. 2. Black 1 and 3 are gote, but they leave two white stones in atari. To compute their value, first imagine that White connects at $\triangle$. Assuming *a-b* at the edge, Black's territory is two points larger than in *Dia. 1*, and White's is three points smaller, (at *b*, $\triangle$, and 2). That makes five.

Dia. 3. Next, if Black captures at 1, he gains another four points in gote. Adding in half of this, we get:

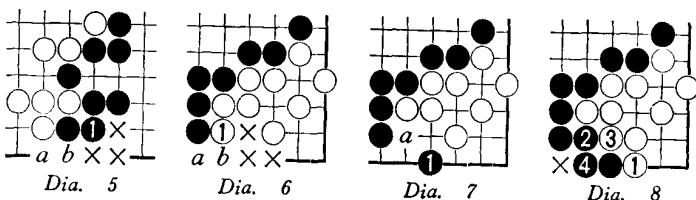
$5 + (\frac{1}{2} \times 4) = 7$ points in gote.



2nd largest move: B — 6 points in gote.

Dia. 4. Since White cannot hane at *a* in sente, we can assume Black *a* and White *b*. White has gained three points of territory: two at $\triangle$ and one at $\times$.

Dia. 5. By connecting at 1, Black also gains three points of territory, so the total value is six points.

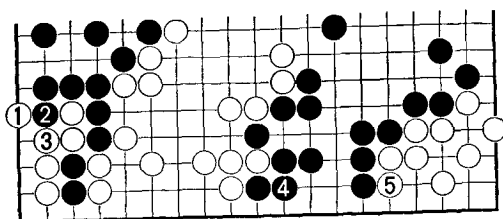


Smallest move: C — 4 points in gote.

Dia. 6. After White 1, assume Black *a* and White *b*.

Dia. 7. By playing 1, (or *a* — White ignores either move), Black can destroy the three points marked x in Dia. 6.

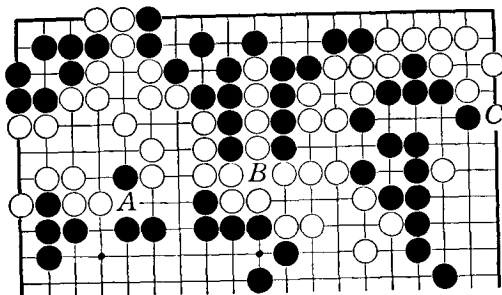
Dia. 8. Toward the end of the game the exchange from 1 to 4 is reasonable, so Black has augmented his own territory at x, bringing the total value of Black 1 in Dia. 7, or White 1 in Dia. 6, to four points.



Combination Figure

Combination figure. Having the first move, White gets two of the three large plays. Black's only gain is six points for connecting at 4. If White began at 4, Black would take Dia. 2, gaining five points, and next Dias. 3 and 7 would be miai, so Black would get one of them, bringing his total to nine points.

Problem 6. *Black to play.*

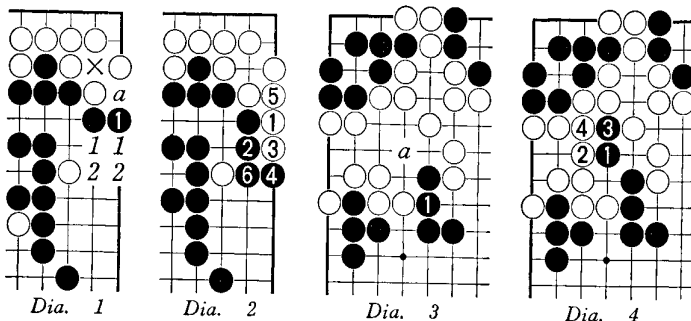


Largest move _____ smallest move _____
 A _____ B _____ C _____

Largest move: C — 5 points in reverse sente.

Dia. 1. Black 1 saves four points of friendly territory, and later on Black can play a in sente to rob White of x.

Dia. 2. White 1 to 5 are sente. Black cannot afford to answer 1 at 3, because he would be risking considerably more than White in the ensuing ko fight.

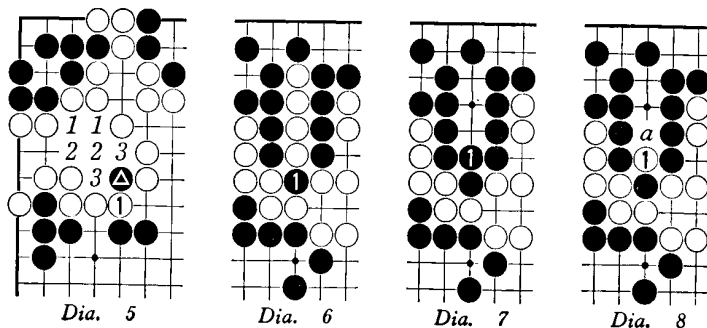


2nd largest move: A — 8 points in gote.

Dia. 3. If Black played 1, White would probably not defend at a, which would save only three points.

Dia. 4. So Black could keep on in sente as shown.

Dia. 5. Comparing this diagram with the last, we see that White 1 saves eight points: two at $\triangle$ plus three more pairs.

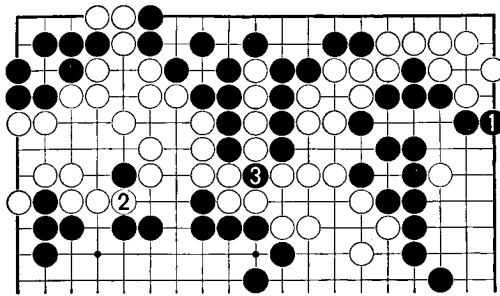


Smallest move: B — 6 (-) points in gote.

Dia. 6. Black 1 may look bigger than it really is.

Dia. 7. Even if Black connects at 1, he only gains seven points: four prisoners and three points of territory.

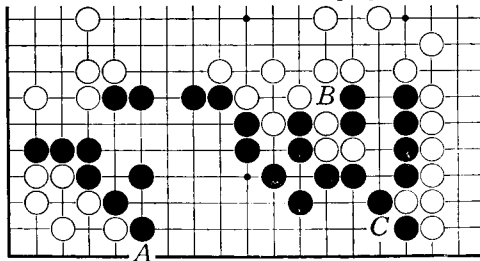
Dia. 8. If White recaptures at 1, Black's gain drops to five points, or four if White also gets to play a. Both Dias. 7 and 8 are gote, so we: average them to obtain 6(-) as the value of Black 1 in Dia. 6.



Combination Figure

Combination figure. By starting with the reverse sente play, Black is able to take two of the three large moves for a total gain of about eleven points. If he had started with 2, White would have played 1 in sente, then 3, and Black's gain would have been only eight points.

Problem 7. White to play.

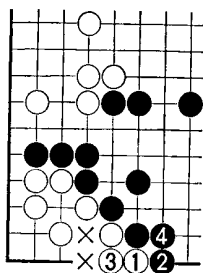


Largest move _____ smallest move _____
 A _____ B _____ C _____

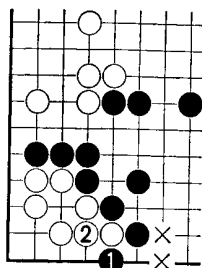
Largest move: A — 4 (+) points in double sente.

Dia. 1. White can play 1 and 3 in sente.

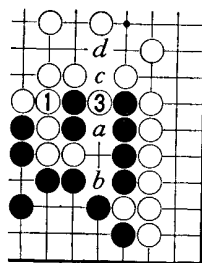
Dia. 2. Similarly, Black 1 threatens to kill the corner. The difference between these two diagrams is the four points marked **x**, plus a little more since in *Dia. 2* White may have to give up another point to avoid a seki.



Dia. 1



Dia. 2

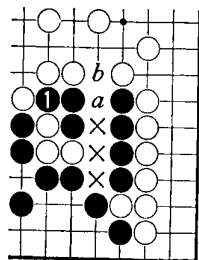


Dia. 3

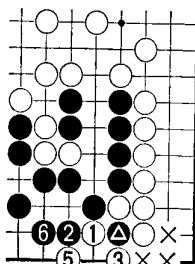
2nd largest move: B — 11 points in gote.

Dia. 3. White 1 rescues three white stones, and if Black plays elsewhere White can follow with 3, capturing two black stones. (If Black tries to connect at *a*, White plays *b*.) White 3 is worth six points in gote, as compared with Black 3 followed by Black *c*, White *d*.

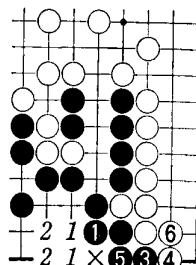
Dia. 4. Assuming Black *a*, White *b* in this diagram, the total difference between it and *Dia. 3* is fourteen points: nine points of black territory, (three prisoners plus the **x**'s), and



Dia. 4



Dia. 5
④ elsewhere



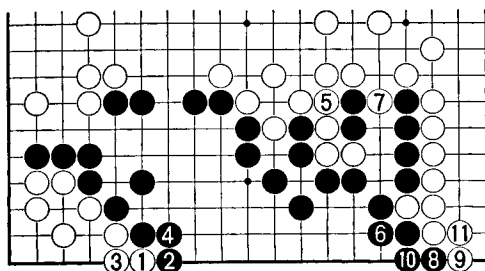
Dia. 6
② elsewhere

five points of white territory, (two prisoners plus c in Dia. 3), but since White 3 in Dia. 3 is gote, only half its value, three points instead of six, should be counted. White or Black 1 is therefore worth $14-3=11$ points in gote.

Smallest move: C – 10 points in gote.

Dia. 5. White 1 means five points of territory for White: two for capturing  and three for the x's.

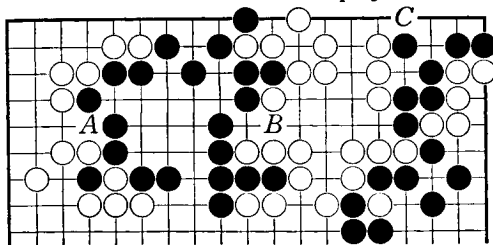
Dia. 6. Black 1 likewise means five points, so the value of a move by either side here is ten points.



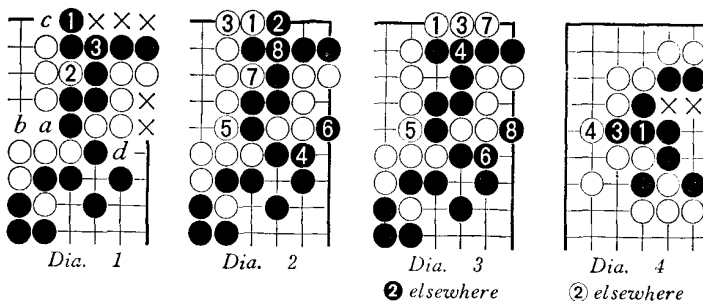
Combination Figure

Combination figure. White gains four points at 1 and 3, then fourteen points at 5 and 7, making eighteen in all.

Problem 8. Black to play



Largest move _____ smallest move _____
 A _____ B _____ C _____



Largest move: C — 6 points in gote.

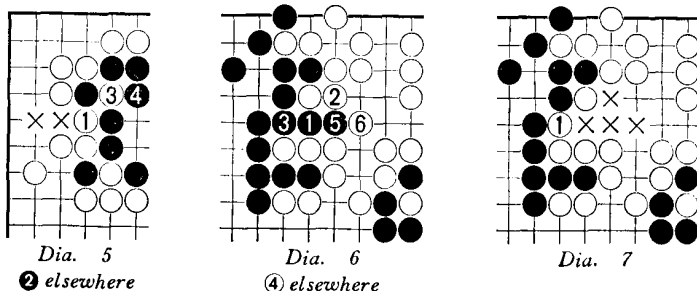
Dia. 1. Black must answer White 2 at 3, or a white throw-in there is fatal. After this Black *a*, White *b*, and then White *c*, Black *d* are a fair assumption to make.

Dia. 2. Suppose White plays 1. If Black replies at 2, he has to keep on at 4, 6, and 8. White has erased two of the points marked **x** in *Dia. 1* and been able to play both 3 and 5 instead of just one of them, so his total gain is three.

Dia. 3. If Black ignores White 1, White continues with 3, 5, and 7 in sente and Black loses the other three points marked **x** in *Dia. 1*, bringing the total difference between *Dias. 1* and 3 to six points in gote.

2nd largest move: A — 5(-) points in gote.

Dia. 4. Black 1 promises Black 3.

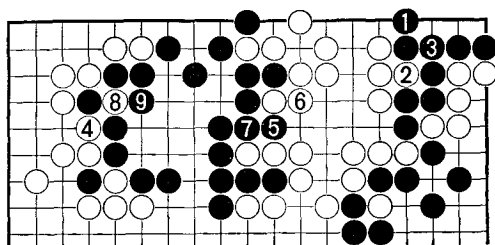


Dia. 5. White's territory is now two points larger than before, Black's is two points smaller, and White has captured a prisoner, making a total difference of five points. Since Black may be able to recapture the prisoner, we count this as 5(-).

Smallest move: B - 4 points in gote.

Dia. 6. Black 1 gains nothing without 3, so it is gote.

Dia. 7. White 1, also gote, saves four points.



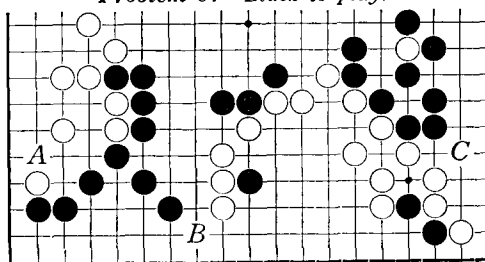
Combination Figure

Combination figure. In the best sequence Black takes the largest and smallest plays. Consider these alternatives:

i) Black 4, White 1, Black 5 and 7, White plays *Dia. 3*. Black has gained 5 (-) on the left but lost 6 on the right.

ii) Black 4, White 1, Black plays *Dia. 2*, White 7. Black has gained 5 (-) on the left but lost 4+3=7 on the right.

Problem 9. *Black to play.*



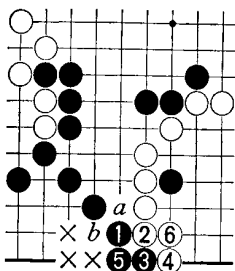
Largest move _____ smallest move _____

A _____ B _____ C _____

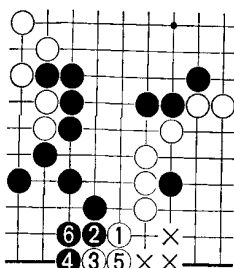
Largest move: B — 6 points in double sente.

Dia. 1. White cannot afford to ignore Black 1, and Black 3 and 5 are also sente. White *a*, Black *b* will come later.

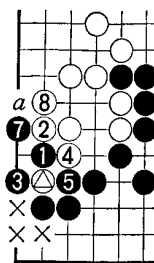
Dia. 2. White could perform the same manoeuvre in sente. The difference is three points of territory on each side, or six in all.



Dia. 1



Dia. 2



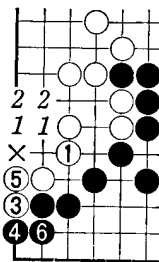
Dia. 3

⑥ elsewhere

2nd largest move: A-10 points in gote.

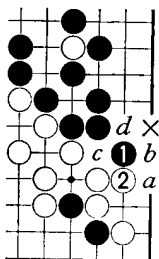
Dia. 3. Black has gained five points of territory: two for ⊕ and three others. Later, *a* will be White's sente.

Dia. 4. White also gains five points of territory if he plays first, so the total value here is ten.

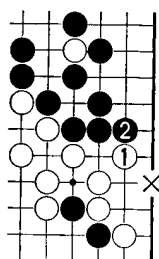


Dia. 4

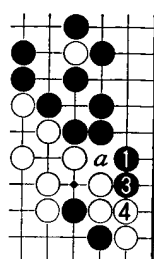
② elsewhere



Dia. 5



Dia. 6



Dia. 7

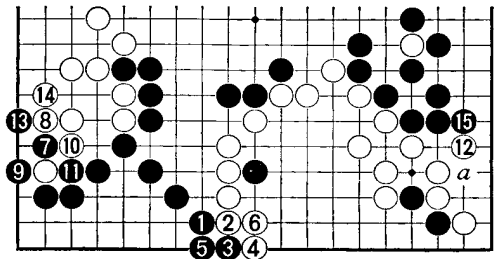
② elsewhere

Smallest move: C — 2 points in double sente.

Dia. 5. Since Black cannot play *a* in sente, assume White *a*, Black *b*, and, of course, White *c*, Black *d*.

Dia. 6. Making assumptions similar to those in *Dia. 5*, we find that the difference between *Dias. 5* and *6* is only one point of territory on each side, or two in all.

Dia. 7. Black 1 is not necessarily sente, either. If White ignores it, the 3-4 exchange costs him only three additional points, (averaging Black *a* and White *a*). That is, Black 1 and 3 put together gain only $2+3=5$ points.



Combination Figure

Combination figure. Black takes both big points with 1 and 7 while White gains only a small amount on the right edge. Some alternatives:

- i) Black plays 7 at 12, White 10, Black *a*. Black has given up ten points on the left side to get only five on the right.
- ii) Black plays 1 at 7, White plays 1, 8, 10, and 12. By letting White play 1, Black has lost six points.
- iii) Black plays 1 at 12, White plays 1 and 10, Black plays *a*. He has given up $6+10=16$ points to gain only five.

Scoring Chart

Problem	1	2	3	4	5	6	7	8	9	total
Your score										

Total	50	60	70	80	90	100	110	120	130	140	150	160	170
Rank	8 kyu	7	6	5	4	3	2	1 kyu	1 dan	2	3	4	5 dan